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ORIGINAL ARTICLES.

CHRONIC BRIGHT'S DISEASE.*

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Under this head we may consider three different diseases of the kidneys, each having a pathology of its own; each variety beginning in a particular part of the organ, and extending to the other structures secondarily.

There is, therefore, disease originating respectively in the uriniferous tubules, in the blood vessels, and in the fibrous stroma. That which originates in the tubules is always inflammatory in character. It may be acute or chronic. That which begins in the vessels consists of a peculiar degenerative change, sometimes called amyloid degeneration. That which begins in the stroma proper is by some considered to be inflammatory, and by others to be hypertrophic in character.

We have, then, the inflammatory, affecting the tubules, and secondarily the stroma; the waxy or amyloid, beginning in the vessels; and the cirrhotic, originating in the fibrous stroma.

The inflammatory type may begin acutely, or it may be from the first chronic in character. It is usually caused by exposure to cold, the action

of certain drugs, such as alcohol, cantharides, turpentine, copaiba, carbolic acid, chlorate or nitrate of potash, phosphorus and arsenic.

The infectious diseases may also be considered causes; as scarlatina, typhoid fever, typhus or yellow fever, diphtheria, pregnancy, meningitis and erysipelas. In scarlatina it usually develops late, eighteen to twenty days from the beginning of the disease. In most other diseases it will be found in the early stages, and is more the result of the impression made on the nerve-centres than of the specific action of the poison. A burn on the surface, if extensive, sometimes causes nephritis. Inflammatory changes may extend up from the bladder through the ureters and pelvis of the kidney and excite the disease. Micrococci are thought by some to be a cause.

The waxy or amyloid degeneration may be caused by any of the exhausting diseases, phthisis, syphilis, suppuration in the joints, bones, etc.

The cirrhotic or interstitial nephritis may be caused by the long continued use of alcohol, gout, continued mental

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strain; and it is evident that there are many cases, the causes of which are unknown to us.

The anatomical changes in the inflammatory type are, in the first stage, an enlarged and deeply congested kidney; the capsule smooth and transparent, easily removed; the cortex, bluish-red; the malpighian bodies appear like small dots of blood; small spots of blood are almost always found in the cortex; the medullary substance is greatly congested: the organ as a whole is soft and brittle. As the disease advances, the organ becomes more pale, the surface more mottled, the tubules are full of epithelium in a granular state. Later on the organ becomes smaller, sometimes going below the normal size; it is more firm, not so easily broken down. In this stage we have the fibrous stroma involved. Secondary changes may take place in the heart. First, dilatation, quickly followed by hypertrophy.

In the waxy or amyloid form we may have at first what seems to be a healthy kidney, but by the use of iodine we get a reaction, which indicates a change in the malpighian tufts and small blood-vessels. By the microscope the stroma and tubules are found to be normal. Later, the cortex seems to increase and is paler; the stroma more dense than normal, and finally a contraction of the whole organ to sometimes less than half the usual size.

In the cirrhotic or interstitial form we have a disease the progress of which is much slower. In the early stages, the organ is of full size; the capsule more adherent; the surface somewhat uneven and may present cysts; the cortex relatively enlarged by increase of the stroma; no change in the blood vessels or tubules. Later on the organ will be much contracted, perhaps to one-fourth its size; the capsule cannot be stripped off without tearing the organ; the surface uneven and granular and of a reddish color; on section the cortex relatively diminished, dense and firm, almost fibrous. The tubules atrophied, due largely to the contraction, and cysts usually are numerous.

It is well then to remember that in all three forms of Bright's disease we may have, if the case lasts long enough, a small contracted kidney, and that one

form will not continue long without developing to some extent the pathology which belongs to one of the other varieties.

The symptoms of the inflammatory type are the decrease in the amount of urine, the abundance of albumen, and the œdema of the skin, usually found about the eye and face in the morning, and somewhat in the lower limbs in the evening, if the patient is out of bed. The urine may, if the disease begins suddenly, contain blood, and usually does contain casts, mostly of the epithelium; the urea is diminished, the specific gravity reduced, unless the quantity of water is relatively small; the pulse is very little quicker than usual and temperature not much elevated; more or less nausea; general feeling of debility with pain in the loins; possibly some tenderness over the kidneys; a slight sense of chilliness, not severe, but continuous and out of proportion to the elevation of the temperature. In cases where there is a sudden suppression of urine, and sometimes where there is not, we have a very severe line of symptoms develop: That of coma, convulsion, or delirium, according to the type it may select; as what we call uremia, may have either of the three types. Often two or more combined, but one will be found more prominent than the other. I have seen cases where the delirium was the only marked nervous symptom, but the convulsive type is most common. The urine contains as crystals, uric acid, urate of soda and oxalate of lime; as formed substances, blood globules, casts of almost all varieties, but, as stated, the epithelium the most common, renal epithelium and round cells.

Later in the course of the disease, the urine is more abundant, does not contain blood, not so many casts, but still remains low in specific gravity, sometimes I have seen it fall to 1001. The dropsy may continue, but there may be a general letting up of the symptoms and the patient feels that he is getting well, and I do not think this an improbable result in this type of the disease, providing we can have the case under complete control for a sufficient time and before the pathology has extended to other than the uriniferous

tubules, as it will do if the disease progresses.

In the waxy or amyloid form the onset is gradual and insidious. The history of some wasting malady, as phthisis, syphilis, the suppuration of bones or joints, followed by an excessive flow of urine of low specific gravity and pale in color, containing little or no albumen at first and but few tube casts, with no dropsy, enlargement of the liver and spleen. The anæmic condition of the blood, gradual failing of the strength of the patient, partly from the diseased kidneys and partly from the condition which gave rise to it, gives us a condition which justifies the diagnosis of amyloid degeneration.

In the cirrhotic or interstitial form the onset is more gradual, and it may exist a long time without manifesting itself by any particular symptoms.

Our attention will often be directed to the kidneys by the dyspeptic symptoms, the frequent headaches, the blindness due to retinitis, and the heart complication. It is found more frequently between the ages of twenty and fifty years. It is rare in childhood. Men suffer more often than women. The loss of vital fluids, malaria, syphilis, abuse of alcohol, and extreme mental exertion, may tend to develop this disease. It is my belief that mental exertion is a much more common cause than is generally supposed. The urine is very scant and contains but little albumen at first, the skin is usually swollen and the heart becomes hypertrophied; there is very little or no general dropsy. The gastric catarrh, diarrhoea, anæmia, dyspnoea, bronchitis, œdema of the lungs, headache and the characteristic retinal condition, make the diagnosis easy.

The prognosis is most unfavorable in this type, death usually being from uremia or some of the complications with the heart or lungs. The following table is submitted by Southey, comprising one hundred and forty-one cases of the inflammatory, and three hundred and fifty-eight of the cirrhotic, as the autopsies showed.

Inflammatory	(Parenchymatous.)	Cirrhotic	(Interstitial.)
Dropsy in	75 per ct.	Dropsy in	24 per ct.
No dropsy in	25 "	No dropsy in	76 "
Heart normal in	47.5 "	Heart normal in	6 "
Death from uremia	27 "	Death from uremia	50 "
Phthisis in	8 "	Phthisis in	11 "

The diagnostic symptom in the inflammatory variety would be diminution of urine, abundance of albumen and epithelium, tube casts, diminution of urea and large amount of dropsy.

In the waxy, large amount of urine from the first, little or no albumen, absence of dropsy, amyloid degeneration in other organs.

In the cirrhotic or interstitial, insidious commencement, gradual development of vascular and cardiac changes, in the latter stages increased flow of urine.

The prognosis is grave in all forms, although less unfavorable in the inflammatory than the other varieties. There is more immediate danger in this form, but if it is recognized early and the patient will place himself under proper care, and receive intelligent treatment, there is a chance of his ultimate recovery. The chances grow less as the disease advances.

With the waxy and cirrhotic forms the prognosis is bad from the first, although life may be prolonged for a long time. The treatment of this disease will depend largely on the stage of the disease and the variety that is believed to exist.

In the inflammatory, if in the early stage, the arrest of the disease is the object to be sought. This is best accomplished by the patient placing himself in bed, although he may feel that this is unnecessary. The advantages gained are that the patient is given rest and is protected from drafts and sudden changes which tend to increase the congestion, and the skin is more active. When out of bed the protection of the body by proper clothing is important. The diet should be milk in large quantities; cereals and starches to give variety; meat and eggs should not be allowed. The care in diet and protection of the body, should not be relaxed when the more urgent symptoms pass off, as we may then expect to have a relapse and the disease will progress; but it should be kept up until all trace of the disease has disappeared. This may require months. It is not the intention to require the patient to remain in bed all this time, but to return upon the first evidence of cold or chilly sensation. Counter-irritation should be kept up

over the kidneys. My own choice is dry cups followed by prolonged use of iodine.

The bowels should be kept open but not purged. The kidney in this form should be washed out so as to free the uriniferous tubules.

For the bowels, the compound jalap powder together with calomel acts very well. Elaterium may be used if there is much dropsy, but generally the jalap and calomel will, I believe, answer better. I do not object to giving one grain of the calomel three times a day for three days, then rest from it for one to two weeks, and after a time leave it out entirely. For the kidneys, digitalis together with lemonade, makes, perhaps, the safest and best diuretic.

For the skin, the proper use of pilocarpine and the steam or vapor bath meet the indication. To relieve the inflam-

mation and also to relieve symptoms of urea the use of veratrum viride has been most satisfactory in my hands. The proper use of opium will do great good to relieve the urgent symptoms at the time and bridge it over until you can apply other treatment.

In the waxy form, the most important thing is to seek to remove the cause, if it can be ascertained, and support the patient.

In the cirrhotic form, symptomatic treatment is perhaps the best to follow. I have seen marked improvement follow the relief of a chronic bronchitis and by aiding a weak heart. In this form the diet and care of the body is of the utmost importance. Not from a curative standpoint, but that the patient may enjoy a fair degree of health and his life be prolonged.

THE DIAGNOSIS OF BILIARY CALCULI CONFIRMED BY EXPLORATORY INCISION.*

J. AMBROSE JOHNSTON, M. D., CINCINNATI.

Since the year 1565, when Johann Kentmann, of Dresden, first observed gall-stones, until now the profession has always felt the liveliest interest concerning the subject of biliary calculi. The last decade seems even to have added a new interest, dependent largely upon the success attending operative treatment of this serious and painful malady. Prior to the time when operative treatment was resorted to, as regards the pathology, diagnosis and treatment of the forms of disease produced by gall-stones, medical literature teemed with materials which, from their extent, it is scarcely possible to review. To-day no small space is occupied in our journals by the reports of gall-bladder operations, yet even with this plethora of gall-bladder literature we read with avidity anything that would seem to give us more light on the diagnosis and treatment of a disease of so great moment and prevalence.

Consequently, I report the following case, which gives a composite picture of the early symptoms of gall-stone cases, and which exemplifies how, at the variant stages of the disease, the symptoms do not present themselves synchronously, but one manifesting itself one time and one or more at another. It is those cases giving the lighter symptoms that are the most difficult to diagnose, and they are the ones which are the easiest to operate upon successfully.

Mrs. R., aged twenty-two years was seen by me in the spring of 1894. She complained of excessive pain in the right hypochondriac region. Being pregnant at the time several months, the excruciating pain caused premature labor, from which she easily recovered. Some few days after delivery I felt an enlargement at the site of the gall-bladder, which appeared to be two inches in diameter, and was easily palpated on account of her thin and lax abdominal walls. Inquiring into her

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history, I found that she had been having attacks of periodical pain for four years. Though not jaundiced, I believed there was obstruction in the biliary passages, probably due to biliary calculi, and so informed her. She did not accede to the proposed exploratory operation at this time. A few months later, a recurrent attack coming on, I was called to see her, and at this time could not make out any enlargement at the site of the gall-bladder, but from what I knew of the case I still adhered to my first opinion. I proposed operative interference again, to which proposition she readily acquiesced. The operation was done at the Presbyterian Hospital, October 3, 1894. The exploratory incision, for the confirmation of the diagnosis, was made beginning at the right rib margin and extending downwards along the outer margin of the right rectus muscle for three inches. The gall-bladder was found non-adherent, one inch in diameter, and filled with forty-five stones, which were removed in the ordinary way, and the patient made an uneventful recovery.

There is nothing unusual or extraordinary in this case. It fully typifies the course taken by the majority of gall-stone cases in their early months or years, and, as usually seen by the physician, present only the symptom of pain. It is the meagerness of symptoms—so far as variety is concerned—that permits these cases to run without a positive diagnosis and lose the golden opportunity when the surgeon's knife might avail them much. Had I not seen this case at the time she had the premature labor, and felt what I supposed was the enlarged gall-bladder, I could have been guided in my diagnosis only by the paroxysmal pains she had. It is such cases as this, periodically harassed by pain, unattended by jaundice for an indefinite period, not invariably marked by a distended gall-bladder, that physicians are likely to let go from bad to worse, because they have not a group of symptoms to decide them what to do. In this case, uninterfered with, possibly, the stones would have passed into the common duct, one by one, and have occluded it for so long a period, if not permanently, in their passage that the cholemic condition

would inevitably have compromised her prospects for a long and healthful existence. Had we waited long enough, until the stones passed into the common ducts, we could have had the symptoms of jaundice, clay-colored stools and pain; but at what a cost to her chances of recovery, if it became necessary to operate for the removal of stones from that duct, on account of their inability to pass onward into the intestine!

There is no question but that an early diagnosis of biliary calculi is desirable when we consider that it is the cases operated upon early, before the stones become wedged into the common ducts, and always attended by jaundice, that give the highest percentage of recoveries. Statistics on the mortality of operations on icteric and non-icteric cases are not yet available that can be called accurate, but so far about 50 per cent. for the former and about 6 per cent. or less for the latter will in all probability be shown to be the ratio in the not distant future.

Exhaustion from recurrent attacks, collapse from excruciating pain, empyema and dropsy of the bladder, with constant danger of rupture; jaundice, progressively interfering with assimilation and nutrition; perforation of the bladder or ducts from ulceration, with its consequences; and, according to some, the liability of the constant irritation causing cancer, are among the dangers which urge us to make an early diagnosis.

Then, aside from the danger to life, there is the ever-constant danger, in those whose symptom is excruciating recurrent pain, of becoming an opium habitué.

Procrastination in the early stages of this trouble often robs us of our only chance to relieve with any degree of safety.

The positive diagnosis of biliary concretions is no easy matter. The most erudite and experienced physician will occasionally err. Cholelithiasis is the possessor of a great number of symptoms, yet it is not possible to name one of them, or a group of them, for the purpose of making a diagnosis which will invariably be positively diagnostic. A stone or stones in the gall-bladder may be perfectly harmless, and give rise to

either no symptoms or mild symptoms, that stimulate those of other diseases in this vicinity. In such cases we cannot make a diagnosis from the clinical history, and have no business resorting to exploratory puncture with the aspirating needle, and very little justification to employ exploratory incision. There are symptoms, however, which, if properly interpreted, indicate biliary calculi, and determine the course that ought to be pursued.

Pain referred to the right hypochondriac or epigastric region abruptly developed, or in some cases preceded by a sense of uneasiness in that locality, may radiate to any part of the body, and is the symptom that most frequently invokes the aid of the physician. Usually there is more or less tenderness over the site of the gall-bladder, but occasionally even pressure affords relief. Most frequently the pain is caused by impaction in the cystic duct; then we have for our symptoms pain and a distended gall-bladder, which can be felt if the walls are not too thick, or if they are sufficiently relaxed. If the impaction is in the common duct we have pain, jaundice, clay-colored stools, and a distended gall-bladder, which can be felt if it be not rudimentary or atrophied and the abdominal walls not too thick; if the obstruction be in the hepatic duct we have pain, jaundice, clay-colored stools, and possibly a distended gall-bladder from an obstruction in the cystic duct. If the obstruction lasts for months or years the organism may become accustomed to its presence, and present very slight or no symptoms; these are the cases which give us a false security—too often leading us into the delusion that our patient is cured, possibly by some new-fangled treatment. If the common or hepatic ducts are occluded, cholemia continues as long as the obstruction exists.

The foregoing symptoms will make a presumptive diagnosis.

Gastralgia, saturnine colic, ulcer of the stomach and intercostal neuralgia have points of analogy in their symptoms which will make an attack of either resemble one of biliary calculi, but usually by scanning the history of the case these diseases will be differentiated.

Having the history and other signs of

biliary calculi to guide us, we can bring to our aid for the purpose of diagnosis, palpation, percussion, urinary analysis, the thermometer (Fauconneau-Dufresne says a local elevation of temperature is shown), the stethoscope (in conjunction with palpation), the exploring needle, and exploratory incision.

The history, together with palpation and percussion, must be our chief reliance for making a probable diagnosis; urinary analysis, the thermometer and the stethoscope can give us but little help, and the exploring needle is not of much service.

Sounding for gall-stones with a probe passed through a cannula, or with a fine aspirating needle thrust through the abdominal walls, has been successful in revealing the presence of biliary calculi. This manœuvre is not devoid of danger. Death has been known to follow this, what in the minds of some is deemed "an easy and safe" operation. You who have seen ascitic fluid trickle from the trocar puncture through a thick abdominal wall cannot be made to believe that a fine aspirating needle or trocar can be withdrawn from a distended gall-bladder, which, perhaps, contains pus, without the oozing out into the peritoneal cavity of more or less of its contents, and usually with what result? Even were there no danger of fluid escaping from the gall-bladder, the moment a needle is thrust through the abdominal walls, the liver and gall-bladder descending beneath the diaphragm at each inspiration, may cut themselves on the point of the needle as it projects into the abdominal cavity, thus wounding organs which are very vascular. Too frequently is the gall-bladder so small or atrophied that it would be impossible to tell when you are in it. I have seen a gall-bladder that was only about one inch long, and another case with stones in the common duct, accompanied with extensive adhesions, that seemed to have no gall-bladder, in neither of which cases could one have introduced a needle and diagnosed stones; yet in both cases they were present in the common duct. It would have been just about as easy to have discovered them with the aspirating needle as it would be to find a needle in a hay-stack.

The use of this method might or might not show the presence of biliary calculi, but would not show their absence. Under no condition whatever would I consent to this manœuvre, or look with favor upon it, as long as we have another method which is almost devoid of danger if the rules of asepsis are strictly regarded, and which will reveal the true state of affairs in that vicinity. I have nothing but condemnation for sounding with the aspirating needle.

Pain, attended with a palpable gall-bladder or not, recurring every few weeks or months, and requiring large doses of morphia to subdue it, is a sufficient indication for exploratory incision. Cholemia, which has lasted several weeks or months without abatement, attended with pain or not, attended with a distended gall-bladder or not, is a sufficient indication for exploratory incision to confirm our diagnosis and reveal our duty in the premises. The only positive sign of the existence of biliary calculi in the gall-bladder is to see or feel them through an incision made in the abdominal walls.

Warned by the ever-recurring tormenting pain in the hepatic region, or by jaundice of long duration, cognizant of the uncertainty of subjective symptoms, mindful of the elusiveness of gall-stones in that they leave the gall-bladder when least expected, we can confidently resort to that procedure—exploratory incision—which, if we simply use it to make a diagnosis and obey the laws of asepsis, will be of little danger and clear up what has been only conjectural. Though one should not find stones, he will probably find conditions that will require surgical attention. It is better to occasionally not find what you seek for than to let all obscure cases go without giving them the benefit of exploratory treatment.

The cutting down on a distended gall-bladder, the removal of its contents and the fastening of it in the wound for external drainage, is a simple and comparatively easy operation; and the on-looker often marvels at the ease with which gall-stones are excised. Such cases are the rule, but there are exceptions which try the mettle of the sur-

geon. Not only must the operator be able to do a cholecystotomy in a distended bladder, but he must know how to dispose of a small bladder which will not come into the wound for external drainage; he must know when and how to remove stones from the ducts, by pushing them onward into the intestine, by extracting them with forceps, and by cutting into the ducts, whose repair with the suture is no small task. Then, from inability to open the ducts closed, by foreign bodies within, by pressure of tumors from without, or by adhesive inflammation or cicatrization of ulcers, the switching of the bile by anastomosis into the small intestine is a problem to be quickly decided.

Though through an exploratory incision, justified by symptoms of gall-stones, no stones are found, other conditions are very likely to be present which demand attention, and no one need censure himself for having made a mistaken diagnosis of gall-stones.

Trional in Internal Diseases.

Spitzer (*Wien. klin. Woch.*, June 6, 1895) reports the results obtained in Drasche's clinic from the use of the drug. It was tried in a great number of cases (25 of which are given in detail), and a dose of 1 to 2 g. given in the early morning after several sleepless nights. Conclusions: (1) Trional is not only a hypnotic for different forms of psychoses, but acts equally well in lung (especially phthisis) and heart cases. (2) Sleep is induced quickly, and continues as a rule during the following night. (3) Some patients remained stupid with sleep even the whole of the next day, but as a rule the sleep resembled that of a normal person. (4) No bad effects on the circulation or respiration were observed in any case. (5) In isolated cases retching, and even vomiting, occurred on waking; this seemed to be due to idiosyncrasy. (6) The results were also excellent in insomnia due to intercostal neuralgia, rachialgia, sciatica, lightning pains of tabes, and even the pain of cancer. (7) The effects approached those of morphine more nearly than of any other hypnotic.

SYPHILITIC LESIONS OF NERVE TISSUE.

THEODORE DILLER, M. D., PITTSBURG, PA.

I have two cases showing symptoms of lesions of syphilis on the nervous system, which I would like to bring before the Society.

Case 1. This patient, a colored man, is twenty-five years of age, with a history of having had syphilitic lesions in 1888. The symptoms of his present trouble began in September, 1894. He first noticed a gradual loss of power in his legs. This loss gradually progressed from September to December, when the loss of power was absolute, and with this loss of motion there was also a progressive loss of sensation, so that in December last, when he was completely paralyzed in both legs, there was also entire absence of sensation in the paralyzed parts. There was also, at this time, a paralysis of the bladder and bowels and loss of sexual powers. Since December there has been a gradual improvement, and now you see he is able to walk with the aid of a cane and there is a fair amount of sensation in the impaired limbs. The sensory involvement came up to about the lower margin of the ribs, or between the margin of the ribs and the pelvis. You will notice his knee jerks are exaggerated. There was no involvement of the arms and no head pains. I think it may be safely presumed that this was a case of transverse myelitis of syphilitic origin. He has been treated by enforced rest and iodide of potash. Altogether, his improvement has been very satisfactory.

(Patient was examined by members of Society—he could not cross his legs without assistance; the knee jerk was exaggerated).

Case 2. This patient I saw for the first time to-day. He is thirty-four years of age—a printer, and was quite healthy as a boy. In 1890, following a chancre, he had a general eruption over his body and an enlargement of the glands. Several weeks later these glands suppurated, and were for eighteen months running sores. He visited Hot Springs, but obtained no relief. He was for a time under the care of Dr. Mudd,

of St. Louis, who operated and excised several glands. In the spring of 1892, he began to suffer bi-temporal headaches. These became agonizing, continuous night and day, and kept up until 1894—a period of two years. He became very thin, could never get a good night's rest without getting very drunk. During all this time suppuration was taking place. He weighed ninety-five pounds in the fall of 1894. He states that there were two lumps over the left parietal region. There is no cicatrix now, but a depression here, and another further back, at this point. (Illustrating on patient's head). He was treated with iodide of potash, and after a time these lumps disappeared. They had been present two months. In September, 1894, while the headache was most severe, and while he was drinking to excess, on awakening one morning he noticed a palsy of the left side of the face. From October 1st, 1894, to the 10th, while taking large doses of potash, the headache disappeared, and has never returned. The paralysis of the face grew progressively worse until it became absolute. There was no motion whatever on the left side of the face. In the latter part of October he became unable to swallow; the tongue protruded to the right side, and the uvula hung helpless for a period of five weeks, during which time he could partake of only liquid food. At this time an improvement of the palsy became apparent. He was now taking two hundred grains of the iodide of potash. He has had no treatment since last March. During this time the facial paralysis has remained in *statu quo*. He now is gaining in weight and feels well in every other way. The one inconvenience is the face palsy. He states that both ears have been running for one and a half years, and that he has been deaf in the right ear for two years, and that there has been ringing in his ears for this length of time. The headache left him in October, 1894, and has never returned.

In view of the history of this case, the course which the disease has pursued, the severe agonizing headaches, constant day and night, which disappeared upon the supervention of the palsy, (you will notice that only a few days after the appearance of the left side palsy, the headache completely disappeared), the most probable diagnosis to my mind is gummatous meningitis of the base of the brain, probably multiple growths are present.

There is a distinct cicatrix here behind the ramus of the jaw, and perhaps the posterior branches of the seventh nerve have been injured and may prevent total return of power to this side of the face. There has never been any involvement of his legs or arms, either motor or sensory, at any time.

I think the case is clearly one of

transverse myelitis. The total loss of motion and sensation in the legs; the loss of control over bladder and bowels, all occurring in four months; and the non-involvement of any function above the waist, all point to a localized lesion in the lower cord region. The gait is paralytic; and the only point really which favors insular sclerosis is the exaggerated knee-jerk, the ankle-clonus; but we look for both of these symptoms in transverse myelitis.

I am very glad that attention is called to the depression in the bone subsequent on the absorption and disappearance of the growths. It is a point worthy to be observed, and I wish the gentlemen present would step forward and examine the patient, and note these depressions which mark the former locations of the two lumps on his head.

APPENDICITIS ASSOCIATED WITH INTUSSUSCEPTION AND ADHESIVE CONSTRICTION OF THE BOWEL.

J. D. THOMAS, M. D., PITTSBURG.

The patient is a young woman sixteen years of age. She was taken ill the second of this month (September). She was treated by an irregular until the ninth. I saw her on that day, and although the diagnosis appeared to me to be plain, there was a certain amount of tenderness all over the abdomen; the point of the greatest tenderness was in the neighborhood of the vermiform appendix. The patient had been dismissed by the irregular, who stated that the only trouble was "wind." I recognized the gravity of the disease at once. From the ninth until the fourteenth she was under my care. During this time I was a little undecided what to do, some of the symptoms were grave and others were not. One of the greatest symptoms was the rapid pulse, which was between ninety and one hundred. The temperature ranged from normal to not higher than one hundred. During the first two or three days I gave small doses of the mild chloride, but there was no result so far as a movement of the bowels was con-

cerned, and even with the assistance of an injection the fecal discharges were small. On Saturday morning, the 14th, I found her with a temperature of 98.4°, with a pulse rate of one hundred and four, and fecal vomiting. This was the first appearance of fecal vomit, although vomiting had not been a very prominent symptom. The pain was never great during the five days. The patient did not take, during the entire period, over two grains of morphine. On Saturday morning, when I detected the fecal vomiting, I informed the mother that an operation must be performed as soon as possible. As her husband was not at home, and none of her sons, she said she would consider the matter and send me word as soon as a conclusion was reached. About noon I received word that the girl would submit to an operation. I sent her into the hospital with directions to have her prepared for an operation. At half past four I performed the operation. Now come the peculiar features of the case. After cutting down care-

fully—I say carefully, for I have seen many so-called brilliant operators cut through the abdominal walls with a freedom that made my heart stand still—and after getting down to the peritoneum, and cutting carefully through that, I found the bowel adherent to this tissue and was obliged to carry the incision higher up, and then I succeeded in separating it from the peritoneum. After doing this, there appeared to be a mass of what I supposed to be inflammatory exudate. On lifting this up it proved to be an intussusception. After relieving this intussusception, the adhesions fortunately were not very firm, we found the bowel completely constricted. This constricting band proved to be the appendix. So we had the appendix attached in this manner. The appendix at its apex had become adherent to the small bowel, and the bowel, a knuckle of it, had passed down through the space so formed and become constricted. After separating the adhesions between the appendix and the bowel, the constriction was relieved immediately and the appendix was then removed. We found a few drops of pus in the appendix but no foreign body. In separating the bowel from the parietal peritoneum a certain amount of injury was done to the bowel, and we had great difficulty in stopping this unusual hæmorrhage. Neither pressure nor hot water would do it, but by taking a fine stitch and making a longitudinal pucker, the hæmorrhage was finally brought under complete control. By this time, after washing out the abdomen thoroughly with distilled water, we were ready to conclude the operation; but in replacing the intestines we found the omentum would constrict the bowel at a certain point, and we found it necessary to excise a portion of the omentum in order to prevent this. Whether this last condition had existed prior to the operation or whether it had been produced by the manipulation I am unable to say. The patient is now doing well, but of course we cannot say whether she will eventually recover or not.

The next day, twenty-four hours after operation, no evacuation had taken place. Patient suffers no pain of any consequence, but there is still an elevated temperature and rapid pulse.*

* Sept. 30.—Although patient feels perfectly well, she is still in bed. Wound healed by first intention. No drainage.

I would state that it was one of the hardest matters for me to decide whether to operate or not. I do not come to a conclusion at once. I might say in a general way, if the case is a mild one, do not operate; if it is a severe one, an operation is necessary. In these cases I invariably place the patient on his back in bed and give a few doses of the mild chloride or neutral salts. Morphine only when demanded. Liquid diet. Absolute quiet in bed will often produce gratifying results. Little medication is necessary, as it will generally do but little good. Occasionally I apply poultices. The case should be watched with exceeding great care, and if operation becomes necessary no delay should take place.

Castration for Hysteria.

Gilles de la Tourette (*Archives de Tocol. et de Gynéc.*, June, 1895) strongly opposes the practice of removing the ovaries for hysteria. The modern idea that the ovary is the seat of that neurosis is as silly and mischievous as the ancient theory that hysteria arose from the womb. Clitoridectomy was odious and unscientific, but did not kill. 1872 was an evil year. Hegar and Battey both performed oophorectomy for hysterical dysmenorrhœa; Battey's case recovered. Hegar's patient dying "headed the long martyrology of hysterical patients condemned to castration and later to hysterectomy." Charcot especially condemns this unscientific and dangerous operation. He categorically denies the existence of a "genital hysteria;" he even declares that there is no such thing as hysteria, hystero-epilepsy or epilepsy, "of menstrual origin." The catamenia are deranged as a result of the neurosis which they cannot cause. He has never seen a case where the operation could be justified. He has seen many where it had been performed, and the women remained hysterical as before. They had the extra worry caused by knowing that they had lost their ovaries which they could never get back again. Castration for hysteria in the female is as unjustifiable as it would be in the rare cases where hysteria with pain in the testes and scrotum exists in men.

COMMUNICATIONS.

REPORT OF CASES OF SUSPECTED HYDROPHOBIA.*

J. E. RIGG, M. D., PITTSBURG.

I desire to bring before the society the following cases of diseases among the lower animals.

On August 17th, a strange and suspicious dog passed through Wilkinsburg, biting a dog severely, and four cows, one severely, the other three nipped. Sixteen days from that date one cow took ill by a looseness of the bowels, fever, apparent pain in the head, convulsions, dying in thirty-six hours; convulsions excited by attempting to drench. The next day (the 17th) a second cow took ill in pretty much the same condition, dying in twenty-four hours. The evening of the eighteenth day the third cow took ill; did not have any gastro-intestinal symptoms, continuous bellowing, evidence of pain and convulsions, dying in about fifteen to eighteen hours. The dog bitten at the same time on the fifteenth day became stupid, dull and haggard looking; one convulsion that evening. The next day it secreted itself. When found in the evening was in convulsions and was chloroformed. The veterinary surgeon who saw the case pronounced it strychnine poisoning. The dog from whom they received their injuries was lost by those pursuing and nothing was heard of him since.

The milk of the cows was used until they showed evidence of illness. One cow is yet well at this date.

What is the probable diagnosis? What effect of the milk on the consumer and what treatment would you advise in reference to parties who used the milk?

I wrote to Pasteur Institute, New York, in regard to these cases and will read a letter I received.

PASTEUR INSTITUTE,
NEW YORK, Sept. 12, 1895.

DR. J. E. RIGG,
President of the Board of Health,
Wilkinsburg, Pa.

Dear Sir:—There is little doubt in my mind that the cases referred to in your letter of two days ago were hydrophobias, but I do not think there is any danger in the absorption of milk coming from cows infected with the disease unless some abrasions or ulcerations exist in the throat, or in the mouth of the people who use it. Yet I do not think there is much virus in the glands (mammary). Yours respectfully,

PAUL GIBIER.

P. S.—Of course, if the milk is boiled the danger of infection is completely averted.

DR. J. L. SRODES:—As Dr. Rigg has reported this case very fully, I will only add a little more to his remarks, as I followed the matter a little further. At the time of this report the dog had bitten three cows and one dog. Further inquiry showed that after this the dog ran down the railroad and had bitten another dog, three more cows and three horses. Two of the cows are dead and the third was taken sick this afternoon. I intended to watch one of the horses very carefully in order to investigate a little more fully, but the owner had corralled it in a stable which was not any too secure, and it became so violent that he had it shot last night. These animals were all bitten by the same dog referred to by Dr. Rigg. This same dog attacked some Italians who were digging a ditch and was killed by them.

DR. THEODORE DILLER:—I regard this report as a very important one. There is an idea prevalent in the minds of a

*Read before the Allegheny Co. Med. Soc., Sept., 1895.

great many professional men that there is no such thing as hydrophobia. I think such reports as this one are very conclusive. There is undoubtedly an active virus formed in some of the lower animals under certain conditions that is very fatal to other animals and to mankind.

DR. G. W. ALLYN:—The history in regard to this dog conforms perfectly with an experience I had when a boy with a mad dog, and the circumstances and results are similar. I feel that both Dr. Rigg's cases and my own were hydrophobia. I remember one morning on opening the door of a stable where I had the care of a horse, I saw a dog about ten feet away making for the opening. I made a lunge for the door and succeeded in closing it in time. The dog then ran past the stable and bit my dog. The night before the dog had passed through a field containing about forty sheep, and passing on some three miles nearer he bit twelve more sheep, and on the morning of which I speak there were men following the dog and they finally came up to him and shot him. The forty sheep died. I did not wait for my dog to become mad, but shot him at once.

DR. J. L. SRODES:—I would say further that Dr. Rigg and myself intended to observe one of the other horses which had been bitten, but owing to a misunderstanding with the owner, the master got him and shot him. I might also state that all of the animals bitten, both cows and horses, were bitten about the mouth.

DR. J. H. ANDERSON:—I have a similar case of rabies in a dog to report. This is the first case proven scientifically to be rabies in Allegheny county. A small black-and-tan dog had all the symptoms of rabies and was ordered by the veterinary surgeon, who made the diagnosis, to be killed. Mr. A. A. Shepherd, with the assistance of a lady, owner of the dog, tried to chloroform it, and during the operation received a severe laceration of his ring and little fingers. The lady was slightly scratched by the teeth. I got near enough to examine the dog and found pronounced symptoms of rabies, with high fever, partial paralysis of the lower jaw, great central nervous excitement.

The dog died of this disease that night.

I cauterized Mr. Shepperd's wounds within fifteen minutes and sent him to the Pasteur Institute for injections the next day. The president of the institute, Dr. Paul Gibier, fully concurred with my diagnosis. The lady's wounds were cauterized by Dr. Hazzard but she received no Pasteur treatment. Neither patient shows signs of rabies at present. The dog was given to Dr. Taylor of the Bureau of Bacteriology and with Dr. Lacock, veterinary surgeon, a rabbit was inoculated, which in proper time developed paralytic rabies. A second rabbit was inoculated from this one which also developed the same infection.

DR. J. D. THOMAS:—I have been practicing for a number of years. I never saw a case of rabies and I never saw a doctor who had seen a case of rabies and I am a "doubting Thomas." Here we have two cases related by Dr. Anderson. Each was bitten by the same dog. One received the Pasteur treatment and the other did not. Neither of these patients show any signs of rabies, I cannot see anything in the case that proves it to be hydrophobia.

DR. THEODORE DILLER:—How about Dr. Rigg's animals?

DR. THOMAS:—We cannot say in these cases that the disease was hydrophobia.

DR. W. J. MACFARLANE:—Dr. Thomas certainly expresses his personal convictions very strongly in the face of the histories just given. It is true that these cases are very rare and it is not strange that the doctor has never seen a case personally. There is a belief prevalent among the laity that rabies only occur during the warm weather. The police are thoroughly imbued with the idea. All the regulations that are brought to bear upon this matter are intended to end the life of the suspected animal without giving any one a chance to study the case and ascertain positively if he has rabies. The dog is immediately shot. The consequence is, those who are bitten are in terror for a certain length of time. I think the dog should not be shot but confined where there would be no possibility of his doing further harm and then closely watched.

DR. ADOLPH KENIG:—In relation to

this I might say that it is one of Pasteur's laws that if an animal suspected of rabies does not die within two weeks, no fear of hydrophobia need be entertained. It would be better to confine the suspected animal for that length of time at least, before killing him.

DR. J. D. THOMAS:—I would suggest, Mr. Chairman, that Dr. Dulles, of Philadelphia, who has made a special study of these cases for twenty-five years, would be interested in the present instance. Every case of hydrophobia reported by the newspapers, or of which he could learn in any other way, was investigated. In all these years he says he was unable to demonstrate a case of hydrophobia. I hope the gentlemen who presented these cases to-night will bring them to the attention of Dr. Dulles, who will doubtless be glad to hear of them. He has written paper after paper, and report after report upon rabies, and studied the matter specially for many years, and yet he has never been able to locate the case. Not only has he personally investigated a very large number of cases in this country but by correspondence he has carried on his investigations in foreign lands.

DR. J. W. MACFARLANE:—If Dr. Thomas will consult Senn's Principles of Surgery he will see that he reports two cases of hydrophobia. A lady holding a lap dog was submitting to its caresses. The dog licked her face, upon which was a broken pimple. The lady died of hydrophobia. Another case related by the same surgeon was that of a sailor who let a dog lick a cut in one of his hands. The sailor died of hydrophobia. A case is also related of a medical student at Copenhagen who, while making a post-mortem examination of a dog who had died of hydrophobia, cut himself with a scalpel. He died of hydrophobia. I think there are enough cases of hydrophobia, well enough authenticated, to convince any one that there is such a disease as hydrophobia.

DR. ADOLPH KÖNIG:—Dr. Dulles, of Philadelphia, in his last report of cases investigated, states that there were two deaths referable to hydrophobia.

DR. J. B. CROMBIE:—One of the prominent London Societies appointed a committee of which Dr. Horsley was the chairman, to investigate thoroughly

the Pasteur treatment, and this committee confirmed his experiments as far as it was possible. I think it is pretty late in the day to condemn Pasteur's treatment and make charges against him when we recall the amount of work which he has done, and for which the world is indebted to him.

DR. J. D. THOMAS:—I would like to ask Dr. Anderson what was learned at the post-mortem of the dog.

DR. J. H. ANDERSON:—In reply to Dr. Thomas I would say that the post-mortem examination of the dog showed by the condition of the brain and spinal cord an infectious disease and the inoculation and subsequent death of the rabbit proves the conclusion true. Both the dog and the rabbit died from an acute infectious disease. The disease is totally unlike any other in incubation, symptoms, and infection and cannot be confounded with tetanus, septicemia, or hysteria. The fatality of it behooves us to accept the investigation of Dr. Pasteur until we learn more of its pathology. I think this disease and hydrophobia, one and the same thing.

DR. E. B. BORLAND:—I have never seen a case of hydrophobia or any case resembling hydrophobia. I remember discussing this question with the late Dr. James McCann, of this city, and he was very emphatic in his denial of such a disease as hydrophobia. In an extended practice of over twenty-five years he had never seen a case of what might be termed genuine hydrophobia. The only case of Dr. McCann was that of a woman about thirty-five years of age who lived in the country. The doctors in the location all decided that it was a case of hydrophobia, resulting from a scratch on the hand which she received from a dog. Dr. McCann was called and went out to see the woman, but found no evidences of hydrophobia, and the woman speedily recovered.

DR. McLane Tiffiny, of Baltimore, says that he never saw a case of hydrophobia in an extensive surgical practice of twenty years. He further declares that he never saw a surgeon who was certain that he had seen a genuine case. There is no doubt that reported cases are some virulent form of blood poisoning, the nature of which is not yet clearly understood.

DR. J. M. DUFF:—I do not arise to

contradict the assertion of any one that there is no such a thing as hydrophobia, but I think the evidence is pretty strongly in favor of it. I think we should be very careful in condemning the evidence of responsible investigators, and furthermore, we should be somewhat guarded in our public utterances on account of the effect they may have on a nervous public. I have seen a few cases simulating hydrophobia but not quite so marked as the cases reported here this evening from Wilkinsburg. I have seen a case when there was a flock of sheep bitten and they all died. I am not able to tell how many there were. I know of another case where there was a cow and a calf bitten and they died. The dog in this latter case belonged to a family in which malignant diphtheria was raging. At the time, I was a mere boy and every one said that these cases were hydrophobia and I did not have any other idea at that time; but when I look back and take all the circumstances under consideration, I am not as sure that the diagnosis was absolutely correct. I have seen on several occasions lower animals affected with malignant diphtheria and where their actions and death resembled that of hydrophobia.

Another case within my recollection which seems to have some bearing on this subject is as follows: An Englishman got into a fight with an American and in the fight he bit off the thumb of the American. The latter soon after was taken with convulsions and died. We would not call this a case of hydrophobia. Another similar case occurred a short time ago in which a boy had injured his foot and within a few days after he took convulsions and died. My argument is, that every case of death after injury from a bite of a dog or otherwise, or every case of convulsions from bite or other injury, should not be indiscriminately classed as hydrophobia. We want to study and investigate and arrive at the truth of this matter. I wish to get all the information possible, but I think one should not be too hasty in diagnosing a case as hydrophobia.

Dr. J. L. SRODES:—I do not remember of Dr. Rigg stating that the cases reported by him were hydrophobia. I do not think either Dr. Rigg or myself

mentioned hydrophobia. I have not arrived at a diagnosis myself. I confess I have been skeptical with regard to hydrophobia, but the fact remains that we have authentic reports from time to time of animals bitten and dying from the results of these bites, and in this case, so far as I am concerned, I find people who saw these animals bitten. I was not there myself, but eye-witnesses saw the dog bite all of the animals, with the exception of one of the horses. I do not know whether these were cases of hydrophobia or not, but you have had the histories recited this evening and the results. It is said that "a rose by any other name would smell as sweet." You may call it what you please, but the fact remains that these animals were violently poisoned by the bite of this dog and the results were just as sure as if you called the fatal disease hydrophobia.

Dr. J. E. Rigg in concluding said:—We have not been able to find out anything about the dog. No one has recognized the dog as belonging in or about Wilkinsburg. We have not been able to find any one to claim him. We had to make our investigations in a quiet manner as I did not deem it advisable to let the matter get into the newspapers or into the mouths of the people; and we counseled secrecy to all with whom we talked. I tried to avoid creating any excitement.

In regard to whether or not such a disease as hydrophobia exists I do not care to attempt to state. I simply presented these cases to the Society for discussion: I might in this connection relate a peculiar case which occurred in Baltimore. An old man and his wife kept house alone. They owned a large dog. For several days the dog had been indisposed and rather quiet, despondent, had lost his vim. One morning the man went to feed him and was bitten. The dog appeared very vicious and was getting the best of the old man. His wife came to the assistance of her husband and she was bitten. The dog was shot by one of the neighbors shortly after. Sixteen days after this the old man was taken with a disease and was seen by a number of Baltimore physicians. The next day the wife became ill. Both had to be forcibly confined to

bed and they died within forty-eight hours. Of what disease did this old couple die?

In the case reported to me this evening I did not proffer a diagnosis. I gave the diagnosis of the Pasteur Institute of New York. There was little doubt in the mind of the physician in charge of that institution. Now the question is

simply this, was it hydrophobia or was it some epidemic or endemic disease affecting these animals? Animals surrounding the ones which were bitten were not affected. They did not suffer. The disease was evidently caused by a specific poison given off by the dog. I do not think we should ignore this fact.

RECENT ADVANCES IN BACTERIOLOGY WITH SPECIAL REFERENCE TO FOOD.*

M. V. BALL, M. D., PHILADELPHIA.

Bacteriology is, comparatively, a recent science. Only within the last ten years has it received any special attention, and within this time it has been given a place in the medical colleges and become recognized as an important department of knowledge.

Municipalities are forming laboratories for bacteriological work, and governments are instituting, on a large scale, researches, which must eventually be of great service to mankind. It is hardly to be expected that this subject should as yet be the common property of any but those who have made it a special study, and, therefore, a few words as to the nature of bacteria will not be out of place here.

Bacteria—from the Greek, meaning little or minute *rods*—is a term applied to various forms of organisms, microscopic in size, closely allied to the lower types of fungi and algæ; usually containing no chlorophyll; capable, in many instances, of propelling themselves with swift motion through the liquids in which they are found, and possessing, for this purpose, small cilia or flagella, like other types of microscopic plants.

They are very minute, requiring for their detection powerful lenses. Some idea of their size may be obtained from the statement that in the space of an inch from 15,000 to 20,000 can be placed side by side; but, growing together in large numbers as they do, such aggrega-

tions or colonies can readily be seen with the unaided eye, though the individual members of these colonies cannot be recognised.

Bacteria are neither yeasts nor moulds, though possessing some of the characters of both.

The name, "bacteria," is not a good one, since other than rod-shaped organisms are collected under this group. Micrococci are globular or spherical bacteria; bacilli are the rod-shaped bacteria; and spirilli are spiral formed or twisted bacteria. The colonies of one form are not to be distinguished from the others, but under the microscope the difference in shape is readily made out.

Bacteria are quick breeders; they multiply very rapidly. From one or two germs thousands are obtained in the course of a few hours. Some one has made the calculation that a single germ, if uninterrupted in its growth, would fill an ocean with its progeny in five days; but, fortunately, it digs its own grave by the poisons it generates, and so puts a limit to its growth. Some require several days before germination occurs. Two kinds of growth are known; one, in which reproduction is a process of fission or segmentation—one bacterium dividing itself into two, and each of these again sub-dividing—in reality, a continuation rather than a reproduction. And a second kind, known as sporulation. The germ gives rise to a spore, the spore then takes on a separate existence and, when the conditions favor-

* A lecture delivered before the Franklin Institute, 1895.

able to maturation exist, it gives rise to a new germ.

Both forms of growth are utilized by the same bacterium. Under ordinary conditions it multiplies by fission when a permanent form is advantageous, or, as some think, when the soil is particularly rich, it produces spores. Spores have not been found in all bacteria; those possessing them are very resistant to all physical and chemical agencies, and withstand a high degree of heat without being destroyed.

For the different bacteria different conditions are necessary. Just as different plants require different kinds of soil and temperature, so these minute plants react differently and demand for their growth various surroundings. Some are not at all particular, and flourish on any sort of soil. They are like weeds that grow without attention; others again are as sensitive as hot-house plants, and require very carefully prepared media and a suitably regulated temperature. While some species demand a plentiful supply of oxygen, others grow only when this is excluded. Sunlight is usually destructive; an alkaline medium is better tolerated than a neutral one, and acids are usually harmful. Moisture is necessary to growth.

Bacteria are not only disease-producers, they manufacture a host of products beneficial and essential to life. Life itself depends, in a great measure, upon the action of these minute plants, which transform the complex molecules into their elements and make them fit for assimilation. If we could separate the industrial germs from the pathogenic or disease-producers, and domesticate the former, while we drive the latter out of existence, life would be more worth the living. This is gradually being attempted. Scientists are pointing out to us the properties of individual varieties, and showing us the methods of cultivation; while hygienists and therapeutists are doing all they can to exterminate the destroyers of life; so that we can already see how, in a few years, cholera will be a rare disease, and tuberculosis will no more be counted as the cause of one-fifth of all deaths.

What advances, if any, have been made in recent years as relates to the subject of *foods*? This is the topic I

have been asked to consider: "Bacteria in their relation to food?"

First of all, I desire to take up the most important of foods, namely, *water*. Water is a food because it is necessary to sustain life, and considered in this sense air might also be classed as a food. But whether or not we call water a food, there are other reasons sufficient for us to make it a matter for consideration here.

Formerly a good water was one which came up to a certain chemical standard. The amount of chlorides and nitrates was determined, the hardness was computed and the total amount of solids ascertained. If a water did not contain more than 1 grain of chlorine per gallon, it was deemed potable. To-day, while chemical analysis still has an important place in the examination of water, it must go hand-in-hand with the biological or bacteriological analysis, and we must know what sort of living organisms inhabit or are to be found in the specimen in question.

In the early days of bacteriology much stress was laid upon the number of bacteria found in a given quantity of water, and water containing more than 500 colonies to the cubic centimeter was deemed unfit for drinking, but now it is not so much the quantity as the quality of the bacteria that is looked for. One typhoid bacillus in a gallon of water is more dangerous than one million ordinary water bacteria; in fact, it would render the water impotable, while the latter would be harmless. Thus, the water analyst of to-day must be a competent bacteriologist as well as chemist; and to be a bacteriologist means a pathologist as well, for, in the investigation of bacteria, animals must be used for experiment, and the nature of the diseases, caused by the bacteria, must be known to the experimenter.

As in the earlier chemical analyses, the chlorine itself was not considered dangerous, but simply one of the indications of faecal contamination, so in the bacterial examination, the presence of certain harmless germs may indicate dangerous contaminations. For instance, the presence of the bacilli commonly found in human faeces, which in themselves are non-pathogenic, would, of course, lead one to infer that human

sewage had become mixed with the water supply.

The methods for the detection of typhoid bacilli in drinking-water leave much to be desired. The examination is often undertaken too late, when the bacilli are no longer present, or have been destroyed by the ordinary water bacteria. Typhoid bacilli do not live long in ordinary drinking-water; and yet, if the water be contaminated with them, a whole city or district can become infected in a short time, and when suspicion is directed to the water the germs have disappeared. To a less degree, this is likewise true of the cholera spirillum, which acts so quickly and is so deadly, and which usually is spread through the drinking-water.

A method lately described, and which promises success, is to take a large quantity of the suspected water (200 cubic centimeters), and add to it 2 grams of peptone and 2 grams of chloride of sodium. Place this in the incubating oven, and, if cholera germs are present, they will multiply rapidly, so that they can readily be detected in the course of ten to twelve hours.

Bacteric examinations have been most useful in the testing of water filters, "germ-proof" filters, etc. Several filters are now in the market, which claim to be germ-proof; that is to say, which are supposed to prevent the passage of bacteria through the very minute pores of the filter. These filters are made of baked clay, infusorial earth, porcelain, etc. As a rule, they can deliver a germless water only for a few days in succession, when, owing to the activity of the bacteria which have collected on the surface of the filter cylinder, the pores are penetrated by the growth, and more bacteria than usual find their way into the water. This, in some cases, can be prevented by a careful cleansing, every few days, of the filter tube. All tubes are not alike, and some afford no protection at all, though they clarify the water by keeping out the grosser particles of dirt.

Filters are best tested by adding to the water, before filtration, some well-known bacterium (usually the red pigment-forming and rapid-growing *Bacillus prodigiosus*) making cultures before and then after filtration. If, under suitable precautions, the germ is found

present in the filtered water, the filter is imperfect. In the testing of large filtering plants, where it is not expected that the water will be perfectly free from the germs, quantitative methods must be used, in order to tell what percentage of bacteria is left behind.

These large filtering plants are in use in several cities, and, it seems to me, they are of doubtful value only. It is true, the water is more pleasing to the eye, and, for toilet and laundry purposes, more valuable; but if the water is contaminated with disease germs, there is no surety that they will be among the 50 per cent. filtered out. They are just as liable to pass through as the others, and such a water is not safe. From the sanitary point of view, filtering plants are only valuable when the water is uncontaminated by human sewage; and to erect such a plant in our city, without paying any attention to the source of our water supply, and even allowing it to be polluted along its whole course, will hardly reduce the death rate, though it may add to the æsthetic quality of the water.

On an average, 500 deaths occur every year in this city from typhoid fever. This means at least 6,000 cases. From an economical point of view, the persons affected are the most valuable members of society, chiefly young adults between the ages of twenty and forty. The expense, in loss of time, medical attendance, etc., is at least \$100 for each case, a total cost of \$600,000 yearly from this one disease, to say nothing about the loss of life; and all because we are obliged to drink the sewage of half a dozen towns above us, and the draining from graveyards and pigsties along the banks of the Schuylkill.

And while we are thus treated by the cities above us, we send our sewage to the towns below. Some strict measures must be put into practice, which will prevent this pollution of our drinking-water.

The second important article of food, with which bacteriologists have busied themselves, is *milk*. A good milk must contain a certain amount of solids and fat, but it can be adulterated with far more harmful matters than water, and these other adulterations are not so readily detected.

A few hours after milking, ordinary

milk has been found to contain 1,000,000 germs to the cubic centimeter. How did these get in?

If the udders of the cow are not kept clean, the first flow of milk will wash the dirt into the milking-pan. If the man who milks the cow is uncleanly in his habits, using dirty hands in the operation, the milk receives this dirt. If the stall is the place for milking, and other animals are moving about, the dust raised falls into the open pail and contaminates the fluid; and, finally, in the transportation from the farmer to the collector, from the dealer to the customer, a hundred opportunities present themselves for the entrance of bacteria, which, when once in, thrive abundantly, the milk being a rich and suitable soil for their growth.

In the markets of Halle, Berlin and Leipsic, Ranke succeeded in finding, in the milk exposed for sale, considerable quantities of cow-dung, which, of course, greatly increased the number of germs to the cubic centimeter—in one case up to 169,000,000.

Bolle, the milkman of Berlin, who sells 60,000 quarts of milk daily, has endeavored to make his large establishment conform to scientific requirements. He has a competent bacteriologist, who makes frequent examinations of the product. The milk is obtained from such dairies only as are under his inspection. Separate examinations are made of the different herds, so as to trace disease to its proper source. The collected milk is filtered each day through immense sieves of gravel, which have first been subjected to a high degree of heat in order to sterilize them. The milk is forced through from below upwards, and collected in proper vessels. Four thousand quarts pass through such a filter in one hour. By this means the dirt is removed and with it about 50 per cent. of the bacteria present.

While this filtered milk keeps longer than the unfiltered, and is more readily sterilized, it is just as dangerous if disease germs were originally present, since, as was stated above, in connection with the filtration of water, the disease germs are just as likely to be among the 50 per cent. that pass through as to be among those that remain.

In order to render milk completely

sterile it must be subjected to such a degree of heat as will coagulate the caseine and make the product undesirable in other ways. If, however, great care be exercised in the milking, and sterilization be carried on at once or shortly after, a very moderate degree of heat will be sufficient to make the milk entirely sterile.

One of the bacteria that is often found in milk has very resistant spores, and, therefore, if milk becomes contaminated by exposure to the dust and dirt of the air or stall, ordinary warming or heating, as is done when milk is Pasteurized (so-called sterilized milk), will not suffice to destroy these spores.

Milk is often sold to us in bottles, and one would imagine that such a product was reasonably clean; but this bottling is done in a very careless way, often in the street by some ignorant delivery boy, while the street sweeper is raising clouds of dust, some of which lodges in the exposed milk.

In one dairy in Dresden, Germany, all the milk comes from stall-fed or dry-fed cows, experience having shown that such cows give a product that is less variable, and contains fewer germs, and sours less speedily than when they are fed on fresh grass. Great care is taken in the milking, and especial attention is paid to the cleanliness of the employees. After the milking the milk is placed in coolers, where it remains two hours, at a temperature of 10° C. Then it is put into a centrifuge, in order to separate the dirt that might accidentally have fallen in. It is now warmed up to 65° C. (Pasteurized), and collected in half-pint sterilized bottles, and the filled bottles again heated for one hour and three-quarters, at 65° C., and quickly cooled. Such milk is reasonably sterile, and the method is the only one to be recommended.

Unless all these steps are followed the milk cannot be considered sterile.

What danger is there in milk from tuberculous cows? This is a question which, just at present, is receiving considerable attention.

Tuberculosis is very frequent among cattle. In the slaughter-houses of Berlin, out of 142,000 head of cattle, 21,000, or 15 per cent. were found to be tubercular. In all Prussia 10 per cent. of all

the cattle slaughtered annually are found to be affected with this disease. Some veterinarians claim that 30 per cent. of all cows are infected, and that a herd cannot be found that is entirely free from the disease. From this one can readily see the importance of this question. In New York City 900,000 quarts of milk are consumed daily. Consumption is likewise a very common disease, causing from one-third to one-fourth of all the deaths among adults, and many, if not the greater number, of the diseases of children are tubercular in origin.

Is the cow an enemy to man? Are we warranted in accusing the milk of consumptive cows as being the cause of consumption in man? The last word has not yet been said on this subject. We can only give the opinions of authorities, the present beliefs gained from the knowledge at hand; and these are that, if the udders of a cow are unaffected, if there is no local tuberculosis, no bacilli are to be found in the milk, the milk may be considered safe. Yet, later investigations have shown that the toxic principles of bacteria find their way into the milk, that the milk of an animal rendered immune to diphtheria or tetanus has the same properties as the serum of the blood, and can protect other animals. If this is uncontroverted, then the milk of tuberculous or consumptive cows may have within it the products of the tubercle bacilli, and such milk may have the same effect upon the human organism as these products obtained artificially, or from cultures outside of the body. The discussion on the benefits or ill effects of *tuberculin* has not yet been closed, and it is impossible to say, therefore, whether such milk, *i. e.*, milk containing tuberculin, is positively harmless or dangerous.

In Paris all cows whose milk is offered for sale must be tested with tuberculin to prove their freedom from tuberculosis. Our own board of health has strongly advocated a similar test.

Tuberculin has been found reliable in the greater number of cases; *i. e.*, if an animal showed signs of temperature rise after the injection of the tuberculin, the disease has always been found present; but the disease has been found when no

rise has occurred, so that it is a positive test only. Tuberculosis is present whenever there is a rise of temperature, but it is not necessarily absent if no reaction occurs.

Because tuberculosis is so very frequent, because 2,700 deaths of adults between 15 and 45 occur every year in this city alone from this one disease, it behooves us to try every measure that holds out the slightest chance of success in reducing this awful mortality, and, therefore, if only as an experiment, it would be worth the time and money to destroy every suspicious animal, and thus prevent the sale of all milk save that obtained from perfectly sound cows. Any reduction in the death rate from this disease will be a step in advance, and our efforts should be directed to this end at all cost.

If the milk of consumptive cows is dangerous, then cheese and butter made from such milk is likewise dangerous, and the sale of such should be equally guarded against.

In Germany, butter has been made from sterilized milk by the addition of pure cultures of certain bacteria, which have the power of coagulating the milk. Such butter has a constant flavor, and does not deteriorate so quickly as butter produced in the ordinary way.

To summarize in regard to milk, we can say that (1) a careful inspection of the dairy; (2) a close examination of the cattle; and (3) cleanliness in the transportation and sale, must be rigorously enforced to safeguard the public health.

As regards meat, little has been said or done. Meat is rarely used in the raw state, and cooking generally renders ineffective the germs likely to be found present.

In the cities of Europe, careful inspection is practiced at the abattoirs, and meat from diseased cattle is excluded or sold under restrictions. Meat-shops are likewise kept very clean, and the meat is seldom exposed in filthy warehouses. In our own cities some of the meat offered for sale on the stands and in the street shops is most unfit for food—some of it, indeed, in a state of putrefaction. Some cities have laws which make such meat liable to seizure, but these laws are seldom operative.

The advances in fermentation deserve attention, for, though they are not, strictly speaking, connected with our subject, yet so closely are the yeasts related to bacteria, and so similar are the methods of cultivation, that any discoveries in the one field are sure to be of value in the other. Bacteria have always been a disturbing element in industrial fermentations, and expensive methods have been resorted to, to prevent the entrance of disease germs—disease, here, meaning impure or improper germs.

The yeasts were formerly considered as few in number—as alcohol-producers and non-alcohol-producers—no serious efforts were made to obtain pure cultures, but the mashes and brews were kept under such conditions that the foreign germs were prevented from growing or multiplying. Beer was stored in ice-cellar, whiskey was subjected to special temperatures, and other elaborate measures were used which now can be dispensed with if we start with pure cultures of yeasts at the beginning, and avoid the entrance of impurities from air, water, etc.

In Denmark, Hansen (and from him a school has originated) pays great attention to the cultivation of pure yeasts. Brewers can obtain from the laboratories such pure cultures and thereby insure a definite alcoholic strength, a constant flavor, and a product that will not deteriorate, even under varying conditions of temperature, etc.

By experimenting with different combinations of yeasts, various degrees of bitterness and different aromas can be developed.

Wines depend very largely for their bouquet, not so much upon the grape as upon the particular germ or germs used in the fermentation of the juice. Experimenters have obtained, with the same kind of grape, a half-dozen different wines by using as many different yeasts. As the pigment yeasts produce various colors, so the yeasts used in fermentation give rise to various ethers, and these ethers give the wine its peculiar bouquet.

We should expect to obtain a Rhine wine from a New Jersey grape by using the yeasts which are common in the Rhine region, or on the Rhine grape.

Even out of apple a good-tasting wine has been produced by the use of particular cultures of yeast.

These researches have revolutionized German brewing, and the large breweries now have competent bacteriologists in their employ, who attend to the cultivation of their yeasts.

The spaces or holes peculiar to certain cheeses are due to the evolution of gases during the ripening process. These gases are produced by certain bacteria, and by using pure cultures of these gas-forming bacteria in the manufacture of cheese, these air-spaces will always occur. The odor of cheese is likewise due to bacteria, and special flavors can thus be obtained at will by using the particular germs.

Bread made from pure yeast will be found to be more digestible, to be lighter and to possess a sweeter flavor. Too little attention has been paid to this in baking. Mixtures of yeasts and bacteria are used, and the baking powder or the flour is blamed for poor results. Sour bread is usually due to a poor quality or impure kind of yeast. The soil out of which we obtain such important food-stuffs has been studied bacterially and has been found to contain peculiar germs, which are all necessary to the growth of the plant. These are the so-called nitrogen-forming bacteria.

They convert the nitrates into nitrites, the oxidizers of organic material, more necessary to the well-being of vegetable life than anything else. Instead of using tons of fertilizers, the agriculturist of the future will cover his fields with cultures of the nitrogen germs and obtain better results. We will even have special germs for special plants. The science of agriculture is yet in its infancy, if we may believe the promises held out to it by bacteriology. Even at present the agricultural colleges are equipping themselves with laboratories for bacteriological research.

Thus I have tried to show that the recent advances in this science are as nothing compared with what may yet be expected; that in these germs, microbes and bacteria, mankind has deadly foes and also important friends; that we must do all we can to rid ourselves of the former and make the latter our willing slaves.

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PHILADELPHIA, SATURDAY, NOVEMBER 23, 1895.

EDITORIAL.

"A DOCTOR OF THE OLD SCHOOL."

At the recent dinner of the Liverpool Medical Institution, the Rev. John Watson, better known to fame as "Ian Maclaren," the author of "Beside the Bonnie Brier Bush," spoke nobly of the medical profession. Remarking that there were two things he wished to say, he went on:

"One is to answer a question that has been often and fairly asked—Was there ever any doctor so self-forgetful and so utterly Christian as William MacLure? To which I am proud to reply—on my conscience not one man but many in Scotland and in the south country—I will dare to prophesy also across the sea. It has been one man's good fortune to know four country doctors, not one of whom was without his faults—Weelum was not perfect—but who each one might have sat for my hero. Three are now resting from their labors, and the fourth, if he should ever see these lines would never identify himself.

"Then I desire to thank my readers, and chiefly the medical profession, for

the reception given to the doctor of Drumtochty. For many years I have desired to pay some tribute to a class whose service to the community is known to every country man, but after the tale had gone forth my heart failed. For it might have been despised for the little grace of letters in the style, and because of the outward roughness of the man. But neither his biographer nor his circumstances have been able to obscure MacLure, who has himself won all honest hearts and received afresh the recognition of his more distinguished brethren. From all parts of the English-speaking world, letters have come in commendation of William MacLure, and many were from doctors who had received new courage. It is surely more honor than a new writer could ever have deserved, to receive the approbation of a profession whose charity puts us all to shame."

This is the heartfelt tribute of a discriminating and appreciative man. It reaches the medical profession through the editorial columns of the *Practitioner*. It so happened that immediately after

seeing this acknowledgment in the *Practitioner*, Mr. Watson's book itself came under the notice of the *REPORTER*. "Beside the Bonnie Brier Bush" should be read by every physician in this country. There are thousands of medical men in the United States whose lives, although they themselves may not recognize it, might have furnished the inspiration of these sketches of a "Doctor of the Old School", and to whom the "Bonnie Brier Bush" would be as "the shadow of a great rock in a weary land."

A few changes in the setting, and many a reader of the *REPORTER* will recognize passages from his own life, and he may appropriate to himself the sympathy and gratitude which "Ian MacLaren" so effectively puts in words for a community, which felt the deeper because of its inability to adequately give expression to its feeling. No country practitioner, however discouraged, will fail to find comfort and renewed inspiration from the simple account of the life and labors of the obscure Highland practitioner, "Weelum" MacLure.

Any physician will recognize that the sketches are from life, and are true to nature. Here is one glimpse of the Highland doctor:—

"No one sent for MacLure save in great straits, and the sight of him put courage in sinking hearts. But this was not by the grace of his appearance, or the advantage of a good bedside manner. A tall, gaunt, loosely made man, without an ounce of superfluous flesh on his body, his face burned a dark brick color by constant exposure to the weather, red hair and beard turning grey, honest blue eyes that looked you ever in the face, huge hands with huge wrist bones like the shank of a ham, and a voice that hurled his salutations across two fields, he suggested the moor rather than the drawing-room. But what a clever hand it was in an operation, as delicate as a woman's, and what a kindly voice it was in the humble

room where the shepherd's wife was weeping by her man's bedside. He was "ill pitten thegither" to begin with, but many of his physical defects were the penalties of his work, and endeared him to the Glen. That ugly scar that cut into his right eye-brow and gave him such a sinister expression, was got one night when Jess slipped on the ice and laid him insensible eight miles from home. His limp marked the big snow storm in the fifties, when his horse missed the road in Glen Urtach and they rolled together in a drift. MacLure escaped with a broken leg, and the fracture of three ribs, but he never walked like other men again. He could not swing himself into the saddle without making two attempts and holding Jess's mane. Neither can you "warstle" through the peat bogs and snow drifts for forty years without a touch of rheumatism. But they were honorable scars, and for such risks of life men get the Victoria Cross in other fields. MacLure got nothing but the secret affection of the Glen, which knew that none had ever done one-tenth as much for it as this ungainly, twisted, battered figure, and I have seen a Drumtochty face soften at the sight of MacLure limping to his horse."

"When the reapers in harvest time saw a figure whirling past in a cloud of dust, or the family at the foot of Glen Urtach, gathered round the fire on a winter's night, heard the rattle of a horse's hoofs on the road, or the shepherds, out after the sheep, traced a black speck moving across the snow to the upper glen, they knew it was the doctor, and, without being conscious of it, wished him God-speed."

And here is another glimpse which brings together, with sharp contrast, two types of the medical profession, and to the credit of both.

"A figure received Sir George on the Kildrummie platform, whom that famous surgeon took for a gillie, but who introduced himself as 'MacLure of Drumtochty.' It seemed as if the East had come to meet the West when these two stood together, the one in travelling furs, handsome and distinguished, with his strong, cultured face and carriage of

authority, a characteristic type of his profession; and the other more marvelously dressed than ever, for Drumsheugh's top coat had been forced upon him for the occasion, his face and neck one redness with the bitter cold; rough and ungainly, yet not without some signs of power in his eye and voice; the most heroic type of his noble profession."

To reach a doomed woman, the famous surgeon and the obscure physician had a perilous trip, which involved the fording of a stream during a winter flood.

"When they neared the body of the river, MacLure halted, to give Jess a minute's breathing.

'It'll tak ye a' yir time, lass, an' a' wud raither be on yir back; but ye never failed me yet, and a wuman's life is hangin' on the crossin'.

"With the first plunge into the bed of the stream the water rose to the axles, and then it crept up to the shafts, so that the surgeon could feel it lapping in about his feet, while the dog-cart began to quiver, and it seemed as if it were to be carried away. Sir George was as brave as most men, but he had never forded a Highland river in flood, and the mass of black water racing past beneath, before, behind him, affected his imagination and shook his nerves. He rose from his seat, and ordered MacLure to turn back, declaring that he would be condemned, utterly and eternally, if he allowed himself to be drowned for any person.

"Sit doon,' thundered MacLure; 'condemned ye will be suner or later gin ye shirk yir duty, but through the water ye gang the day.'

"Both men spoke more strongly and shortly, but this is what they intended to say, and it was MacLure that prevailed."

The surgeon does not appear to best advantage in a flooded river, but he does his work successfully, and then vindicates his personal and professional character worthy of his great reputation.

"When the doctor placed the precious bag beside Sir George in our solitary

first next morning, he laid a cheque beside it and was about to leave.

"No, no," said the great man. "Mrs. Macfayden and I were on the gossip last night, and I know the whole story about you and your friend.

"You have some right to call me a coward, but I'll never let you count me a mean, miserly rascal," and the cheque with Drumsheugh's painful writing fell in fifty pieces on the floor.

"Give's another shake of your hand, MacLure; I am proud to have met you; you are an honor to our profession."

Many incidents are given—not as extraordinary deeds, for they are but everyday experiences in the lives of practitioners of the "most heroic type"—which show how thoroughly Mr. Watson understands medical practice in country districts, and his keen appreciation of this life of self-sacrifice makes his beautiful tribute to the country doctor the sweeter recompense for work too often unacknowledged even with thanks.

But the book itself must be read to feel the warmth and tenderness of Mr. Watson's heartfelt expressions of sympathy and gratitude to the "profession, whose charity puts us all to shame."

Toxicity of the Aqueous Part of the Breath.

Livierato (*Arch. Ital. de Biol.*) investigated the toxicity of the aqueous vapor expired by healthy and by sick persons. Expired air was received and the aqueous vapor condensed in suitable apparatus, the fluid obtained was then injected into rabbits with the following results: (1) Aqueous vapor from persons suffering from diseases of the respiratory tract with fever, injected into rabbits produces a fever which lasts three to six days, general torpor and diminution of reflexes. (2) These effects are less accentuated in the case of patients who have no fever. (3) The aqueous vapor of febrile patients having no respiratory trouble causes no fever or only very slight fever in rabbits. (4) The vapor of healthy individuals has no appreciable effect. (5) Identical results are obtained when the liquid is sterilized.

ABSTRACTS.

THE TREATMENT OF PUERPERAL ECLAMPSIA OCCURRING DURING THE FIRST STAGE OF LABOR.

The scientific treatment of any disease is based as far as possible on some more or less reasonable hypothesis concerning its pathology. In order to appreciate the merits of the various methods of treatment advocated in cases of puerperal eclampsia, it is necessary to briefly consider how much and how little is really known about the pathology of this disease.

The name "puerperal eclampsia" is in itself misleading, because it refers to one symptom only of the disease—a symptom which, it is true, is the most striking and the most serious, but, for all that, a symptom which is only one among many. Headache, vomiting, epigastric pain, albuminuria, and sometimes sleeplessness, are all symptoms of this disease, so that the term "puerperal toxæmia" would express far more correctly the true nature of the condition. What is the nature of this poison, or whether in all cases it is the same, is not known. It was for a long time supposed that the toxæmia was due to a primary morbid change in the kidneys, which prevented them from fulfilling their excretory functions in an adequate manner, so that certain substances normally got rid of by them accumulated in the blood. At the present day grave doubts are thrown on this theory, and it is believed by many that the liver has a good deal to do with some at least of these cases of puerperal eclampsia. It is well known that the healthy liver has the power of modifying many poisonous substances brought to it from the intestine by the portal vein, and a failure on its part to perform this duty would thereby lead to the entrance into the blood of certain substances possessing highly toxic qualities.

Hahn, Masser and others have shown by a very ingenious experiment, that if the blood in the portal vein be allowed to enter the circulation directly, without first passing through the liver,

serious nervous symptoms are produced resembling those of eclampsia, and these symptoms are especially marked after a meat meal. They attribute these symptoms to the presence in the blood of carbamic acid, a substance which, under normal conditions, the liver appears to be capable of converting into urea. It is an interesting fact that after the introduction of carbamic acid into the circulation, in addition to the appearance of nervous symptoms, it was found that the urine became scanty and albuminous. The poison may thus possibly enter the circulation through the hepatic veins, and cause not only the headache, convulsions and other symptoms, but also the renal congestion and albuminuria, which occur in these cases; in fact, the morbid condition of the kidney and the attendant albuminuria may be the result and not the cause of the toxæmia. That poisonous substances circulating in the blood can produce extensive disorganization of the kidneys with albuminuria, has been clearly pointed out by Sir George Johnson in a paper published in the *Medical Magazine* for August, 1894. He relates numerous cases to show that exposure to sewer gas may in some patients induce severe nephritis and albuminuria, and that the condition is rapidly recovered from if the patient is removed from his unhealthy surroundings.

The experiments of Chamberland conclusively prove that some poisonous substance is present in the blood of eclamptic women, although no light is thrown as to the exact nature or origin of this poison. Serum from a healthy human being, if injected into a rabbit, kills it, and the amount required to do this varies with the size of the rabbit. It has been shown that it is necessary to inject ten grammes of healthy human serum for every kilogramme that the rabbit weighs. Thus to kill a rabbit weighing two kilogrammes it would be

necessary to inject twenty grammes of healthy serum, and so on. Chamberland has made many experiments with the blood of women suffering from eclampsia, and has found that the quantity of serum which will kill a kilogramme of rabbit is always less, and sometimes markedly less, than in the case of healthy serum. In some cases five, four or three grammes per kilogramme of rabbit were sufficient to prove fatal, and Tarnier believes that the toxicity of the serum, as determined by experiment, is an important, though somewhat inconvenient method of estimating the prognosis of the particular case under treatment. This poison may fairly be assumed to act directly upon the cortical cells of the brain, and by overcoming the resistance of these cells, to lead to a sudden liberation of energy which manifests itself as a convulsive attack.

The power of restraining the liberation of energy which nerve cells normally possess may be still further weakened by the reflex irritation produced by painful uterine contractions, and in this way is probably to be explained the frequency with which convulsive attacks show themselves for the first time, at the commencement of labor. Labor pains alone are quite sufficient to produce such a result, unless the stability of the cortical cells has first been deranged by the action of the toxic material, and in cases where convulsions appear during pregnancy before the onset of labor pains the poison must be the sole agent concerned in the attack. It is a well-known fact that the symptoms of toxæmia occurring during pregnancy generally subside if the fœtus dies, and that a similar amelioration is observed after the delivery of the child. This would seem to suggest that after the death or delivery of the child the production of the poisonous agent ceases, though the explanation of the good results following delivery are, no doubt, due in part to the cessation of the active labor pains, and the consequent elimination of one source of reflex irritation. The treatment of eclamptic attacks is founded on the belief that the disease is a toxæmia, but, as already pointed out, the nature and origin of the poison are as yet not fully determined. The scientific treatment of toxæmia occurring

during pregnancy consists in preventing, as far as possible, the production of the poison, and in aiding its elimination, and this is accomplished chiefly by restricting the diet to milk and the administration of aperients, diaphoretics and diuretics. When, however, the disease first manifests itself during labor by an attack of convulsions, this plan of treatment is generally inapplicable, so that efforts are chiefly directed towards quieting the nerve centres or expediting delivery. Rapidly recurring convulsive attacks are in themselves a serious source of danger to the patient from pulmonary œdema and increasing cyanosis, and therefore the main object of treatment is to prevent their occurrence or to limit their frequency. Many methods have been suggested which may either be used alone or in combination, and some of these may now be considered in greater detail.

Chloral and Chloroform.—The administration of chloral and chloroform, either separately or in combination, is the method of treatment most widely adopted both in this country and in France, and inasmuch as the mode of action of these drugs is very similar it is well to consider them under the same heading. They act beneficially by quieting the nerve centres, and so rendering them less susceptible to irritation from the poison present in the patient's blood and to the reflex irritation dependent on the uterine contractions. By this means the convulsive attacks can often be checked either partially or completely, and labor may be allowed to take its course. If the patient, as is generally the case, is comatose, chloral may be administered by the rectum. Sixty grains of chloral mixed with two ounces of syrup should be injected into the bowel, and this may be repeated at the end of five or six hours. A third dose should be given six to twelve hours later, and Charpentier believes that it is important to continue the administration of chloral even after the child is delivered. He gives, during the first twenty-four hours after delivery, three to five-grain doses by the mouth, at intervals of three hours.

Chloroform aims at producing the same effect as chloral but in a more rapid manner. If the convulsive attacks

occur frequently and the labor pains are good, it is, undoubtedly, an excellent method of temporizing, and one that is relied on by many obstetricians. By dulling the sensibility of the cortical cells convulsions are prevented and sufficient time is gained to allow of spontaneous dilatation of the soft parts. It should be given in sufficient quantities to produce complete anæsthesia, although if there is no recurrence of the convulsive attacks the patient may be allowed to come round partially from time to time. It is best and most economically administered by means of a Junker's inhaler, but, if this is not at hand, it may be given on a handkerchief or folded towel. Either used alone or in conjunction with some other method of treatment, chloroform is, undoubtedly, a most valuable therapeutic agent in cases of puerperal convulsions arising during labor.

Morphia.—The employment of subcutaneous injections of morphia in large doses has been strongly advocated by Veit, and his success has led others to adopt this plan of treatment. It is generally believed that morphia is dangerous in cases where the urine is scanty or suppressed, but theoretical objections cannot stand against the practical experience of Veit, who in a series of more than sixty cases of puerperal convulsions had a mortality of only 3.3 per cent. He gave the drug in doses which may almost be described as heroic. The plan he advocates is to inject subcutaneously half a grain of morphia after each fit, but limiting the amount to three grains during the twenty-four hours. In spite of the good results obtained, this plan of treatment does not seem ever to have become widely popular in this country.

Hot Baths, etc.—The treatment by hot baths is one which, as a rule, is not applicable to cases of convulsions occurring during the first stage of labor because of the practical difficulties which are met with. The principle appears to be sound, and the results claimed for this method are satisfactory, but unless a bed-side bath is obtainable or the bathroom is very easily accessible the plan is not a safe one to adopt; moreover, it cannot well be employed when the patient is deeply comatose. The object in view is to obtain free diaphoresis, and

so to aid in the elimination of the toxic materials circulating in the blood. If baths are employed, they should be used in the following way: The patient is placed in a bath-tub filled with water at a temperature of 100° F. The tub is covered with a heavy blanket, leaving the patient's face free, and the temperature of the water is gradually raised to 110° F. The patient remains in the bath for half an hour, and if distressing cephalic symptoms are complained of, a towel wrung out in ice-water may be placed on the head. While in the bath, the patient is made to drink large quantities of water, and upon emerging she is wrapped in a warm sheet and then enveloped in blankets, so as to leave only the face free. Within a few minutes free perspiration is observed, and this may this may be allowed to continue for two or three hours. If necessary, the hot bath may be repeated. As a substitute for this plan, the patient may be simply wrapped in a blanket wrung out of hot water, and surrounded with a large number of dry blankets, or, if preferred, the steam from a steam-kettle may be introduced beneath the bed-clothes, which have been raised up by means of a cradle.

Pilocarpin is a drug which, if used at all, requires to be employed with much caution. The free diaphoresis produced by it certainly sometimes gives marked relief, but its liability to induce dangerous collapse should always be kept in mind. The drug has been given subcutaneously in doses of one-fourth to one-third of a grain, the depressing effects being combated by the administration of brandy by the mouth or rectum. Deep coma, a weak heart, or commencing oedema of the lungs are to be regarded as absolute contra-indications to its use.

Venesection.—The value of blood-letting in cases of puerperal convulsions is a point on which there is much difference of opinion, and one on which it is not easy to come to a just conclusion because it is seldom or never employed alone. Blood-letting as a routine treatment has certainly fallen into disfavor, but by many it is still employed in cases where the patient is strong and there are no signs of anæmia. Under these circumstances the operation is done

with the object of lowering blood tension, and so diminishing the irritability of the cortical cells, and in many cases, whatever be the theoretical explanation, the fits are undoubtedly lessened in severity. In cases where, owing to the frequency of the fits, the patient is deeply cyanosed, with great engorgement of the venous system and the right side of the heart, venesection may be employed with the object of relieving the over-distended right ventricle and so improving the pulmonary circulation.

Dührssen's Method.—This treatment is founded on the principle that the most certain method of checking the frequency and severity of the convulsive attacks is by emptying the uterus. During the period of gradual spontaneous dilatation of the os externum many fits may occur, and the patient may thereby be exposed to much danger. Dührssen showed that after the cervical canal had opened up, the obstacle to delivery which is offered by the undilated os externum can readily be overcome by making several deep incisions—usually four in number—reaching from the margin of the os up to the utero-vaginal junction. He asserts that when these incisions are properly made no further obstacle remains, and the child can readily be delivered without any fear of tearing the soft tissues. In Dührssen's hands this plan of treatment has proved highly successful, and he has published a series of thirty-five cases of puerperal eclampsia treated by this method with no maternal death and with the loss of only two of the children. The technique of the operation merits careful attention. The most important point to keep steadily in mind is that the incisions should never be made until the supra-vaginal cervix is fully dilated—that is to say, until the cervical canal is fully opened up. It is to overcome the resistance offered by the undilated os externum that the incisions are employed. The incisions should reach right up to the utero-vaginal junction, as otherwise during extraction a tear may occur and extend beyond this point into the vascular tissue of the supra-vaginal cervix. The incisions are made with long, straight, or angular blunt-pointed scissors, and should divide the cervix into four quadrants. One or two

fingers of the left hand are introduced through the os externum for the purpose of guiding the scissors whilst the incisions are being made. If the incisions are strictly limited to the vaginal portion of the cervix no harm will be done either to the bladder in front or to the peritoneal cavity behind. The incisions are not attended with much hæmorrhage, and after delivery of the child, Dührssen never found any need for sutures. If proper precautions are taken there need be no risk of septic infection. After the cervix has been duly incised and complete dilatation thus brought about, delivery is effected either by means of forceps or version. If the perineum is rigid, this may be divided with a knife and subsequently sutured. When the cervical canal is not dilated, dilatation may be effected by hydrostatic bags, and the subsequent canalization of the external os rapidly effected by incision. As, however, eclampsia so often occurs in primiparæ the preliminary dilatation of the cervical canal is seldom necessary, because in such cases the canalization of the cervical canal frequently occurs before labor actively commences. This operation is only to be undertaken when the mother or child are manifestly in danger.

No attempt has been made to describe all the plans advocated for the treatment of puerperal toxæmia, but the very number of these plans is in itself evidence that none of them is altogether satisfactory. The difference in severity and frequency of the convulsive attacks, and the danger to which the patient is thereby exposed, varies enormously in different cases, and therefore no one form of treatment mentioned above will probably ever be adequate alone to meet all cases. It is conceivable that in time, when the nature of the poison or poisons is more fully understood, some substance may be found which will act as an antidote and so neutralize the deleterious effect which the poison has on the nerve centres. The only attempt which has been made so far in this direction is the intravenous injection of normal saline solution, which acts by diluting the poisons rather than neutralizing it. At present, since the treatment is mainly symptomatic, it is ob-

vious that the therapeutic measures adopted will necessarily vary with the nature and severity of the symptoms present. Chloroform, which is indicated in nearly all cases, may in itself prove sufficient if the labor pains are active and dilatation is going on rapidly; but the inhalation of chloroform, if unduly prolonged, may prove injurious, and Dührssen asserts that it favors the production of blood disorganization, broncho-pneumonia, and fatty degeneration. When labor is slow and the fits infrequent, chloral meets the indications better than chloroform, and when labor is

slow and fits infrequent and unchecked by chloroform, delivery must be affected as speedily as possible. There can be no doubt that in cases of this kind the method of incising the cervix recommended by Dührssen will prove of value. In cases where the labor is slow and fits are infrequent it is useful to supplement the action of chloral by the employment of hot baths or wet packing, and there is no doubt that diaphoresis can be produced more effectively and more safely by this method than by the subcutaneous injection of pilocarpin.—*Practitioner.*

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To set in action the tuberculous process, there must be present the seed (tubercle bacillus), and a suitable soil. It is evident the soil is of the more importance, as in the haunts of men this bacillus is liberally distributed, and the non-tuberculous individual is one in whose tissues this cannot obtain a hold.

The first elements in treatment are plenty of

air, plenty of sunshine, and plenty of good food. Patients do not do well in densely wooded districts, in valleys, by the banks of large rivers and in moist places. They do better by the sea, in districts with low rainfall, with a porous soil, sparse vegetation, and an unimpeded rush of air from the sea. In England there is some difficulty in spending much time in the open air in winter, although I have had patients with high temperatures and suppurating wounds, with acute joint mischief and psoas abscesses out of doors every day in the winter, in spite of snow, frost and rain.

From not treating tubercular inflammations at all, the extreme of treating them too much was reached, but the mean has probably now been reached.

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and 1894 he noticed the hand light purple in color and during attacks the hand became almost black while the fingers remained white.

Ophthalmoscopic examination showed the spasmodic contraction of the arteries of the fundus characteristic of Raynaud's disease. I applied to his spine a descending galvanic current of twenty-four cells, with the positive pole in the cervical and the negative in the lumbar region. Three daily applications for six days seemed to cause a cure.

Mr. S., traveling salesman, aged thirty-five; came to me in last July. Both feet to the tips of the toes, and the left hand from the radius to the tips of the fingers, were a dark purple color. The man was vigorous, active, and apparently in good health. He had suffered from cold hands and feet for years, but during the past winter the feet began to look livid and then the hands also. The

attacks increased in duration until one lasted from February to July when the man applied for treatment.

The urine was normal and no symptoms of aneurism or valvular heart disease were found and syphilis was denied. The ophthalmoscope showed the spasmodically contracted arteries of Raynaud's disease and also in the region of each macula lutea retinae, a large, irregular, dark gray deposit.

Regarding this to be a symptom of syphilis and the case therefore syphilitic endarteritis with vasomotor spasm, I gave him one-fiftieth of a grain of nitro-glycerine three times daily and placed him on antisiphilitic treatment. In two weeks the color and temperature were normal. The patient since acknowledged a suspicious sore on the glans penis four years previously and three months' internal medication for the same.

PERISCOPE.

IN CHARGE OF WM. E. PARKE, A.M., M.D.

MEDICINE.

Aconite to Abort Colds.

The *Medical Record* strongly advocates the plan of giving aconite in the abortive treatment of colds. Small and frequently repeated doses are given, with the result that the fever is controlled, the pain in the muscles disappears, and the patient put on the road to recovery. Aconite is a powerful aid in the treatment of acute bronchitis and colds in the head and chest.

Antivenin: Antidotal Snake-Poison Serum.

Fraser, of Edinburg, in a paper read before the Royal Society (*Medical Press and Circular*), announced that he had succeeded in producing immunity against snake venom, and also that antidotal properties inhere in the blood-serum of immunized animals.

Experimenting on rabbits, among other animals, he first satisfied himself as to the amount of the poison which constituted the minimum lethal dose. He then proceeded to inject quantities below this amount, and found that he could gradually increase them to fifty times the dose originally fatal. Not only that, but a buck rabbit, which he exhibited, and which was then in about the one hundred and fiftieth day of treatment, had gained enormously in weight, from 2,000 grams to 3,000 grams, and had increased greatly in strength, and especially in virile power.

Again he found that the mixture of 1-240 cc. of serum obtained from a rabbit immunized to thirty times the minimum lethal dose with cobra venom averted a fatal result on injection, while the injection of a similar serum half an hour after the injection of a venom which otherwise proved fatal in one hour, promptly stopped the symptoms which had already commenced, and saved the life

of the animal. He calls this protective serum "antivenin." He mentioned as an interesting fact that the rabbit above referred to had received during the months of treatment enough cobra poison to kill two horses, or about two hundred and eighty rabbits if unprotected.

Not only are Fraser's results of great value for the treatment of snake bite in India and other tropical countries, but they possess a deeper significance in accentuating the discoveries yet to be made in the same direction. It appears that immunizing an animal with the venom of one kind of serpent, protects it from the poison of other species.

Iodoform Gauze.

Dr. Pryor has published the following method for preparing iodoform gauze, which is the only dressing he has found that is powerfully antiseptic, non-irritant, and remains sterile when soaked with discharges: Fine-mesh gauze is steam-sterilized. It is then dried. After drying, the gauze is soaked in a 20-per-cent. solution of iodoform in ether for ten minutes. It is then taken out and the excess of ether wrung out with the hands. The gauze is now placed in a basin and covered with a towel. It is left for twelve hours in a warm room, after which time it will be found that the ether has entirely evaporated. The gauze is now of a greenish-blue color, presenting the characteristic starch-iodine reaction. It is unfit for use in this state, the iodine being too free. The next step is to soak the gauze for twelve hours in a watery solution of bichloride of mercury, 1 to 4,000. This acts as a "fixing agent," and the beautiful golden color of the iodoform again appears. The gauze is now wrung as dry as the hands can make it and preserved in glass jar. Prepared in this way, the iodoform is not held in the gauze in mere mechanical association, but is in every bast cell of the fibre (cotton) of which

the gauze is composed. The advantage of this is manifest: such a dressing cannot be poisonous, as the iodoform is not absorbed. The addition of discharges and blood to the gauze again turns it greenish-blue, showing that the iodine is again in a free state. So, when the dressings are saturated they are yet sterile. In cavity walls, there being no glycerin in the gauze, no serious exudation is induced. This material has been used by the author for five years or more, and has largely influenced, in his opinion, the results as well as after-treatment of his operations. He estimates that he makes one dressing where three are made when other gauzes are used. Altogether he claims to have had marvelous results from this dressing. So far as the chemistry of the procedure is concerned it is as follows: When the gauze is green after the ether has evaporated, there is iodide of starch and there is free iodine; when the bichloride has been added, there is bichloride in the starch and there is iodoform; when the bichloride is changed to calomel by blood, etc., the iodine again becomes free and the dressing is again greenish-blue; this, at least, is the author's idea.

—*Western Druggist.*

Water Purification With the Aid of Sodium Fluoride.

In a paper presented at the recent meeting of the Wisconsin Pharmaceutical Association, A. Wangemann, of Chicago, claimed that sodium fluoride added to drinking water was much superior to alum for removing impurities, calcium and magnesium salts, organic matter, noxious bacteria. He especially recommends this treatment for water tainted with sewage. Water thus treated with the fluoride as a rule is absolutely pure, barring the presence of traces of alkali carbonates, sulphates and chlorides. Absolutely pure distilled water, the author says, is obtained if to the water contained in the still sodium fluoride is added in the proportion of four ounces to 1,000 gallons (an excessive amount), the first third of the distillate being rejected. The germicidal action of the fluoride is supposed to make it preferable to alum.—*Western Druggist.*

PATHOLOGY.

Crossed Cerebro-Cerebellar Atrophy.

Mingazzini (*Neurol Centralbl.*), discusses the cause of atrophy of the opposite half of the cerebellum with unilateral cerebral lesions. It is to be sought in the accompanying affection of the tract whose course is the thalamus and red nucleus of the same side and the peduncle of the opposite side. Cases are adduced in support of this, and it is stated that no single case of crossed cerebro-cerebellar atrophy has been found on record where the thalamus on the side of the cerebral lesion was intact. Further, two cases of Jacksonian epilepsy are quoted; in one there was atrophy of the ascending parietal convolution unilaterally with very slight atrophy of the posterior part of the thalamus of the same side, and of the pyramidal tracts on the opposite side; no cerebellar atrophy; in the other, although there was no difference in weight of the cerebral hemispheres, the thalamus of one side was markedly atrophied, here the cerebellum of

the opposite side was also markedly atrophied; hence it is concluded that atrophy of a certain part of the thalamus causes crossed atrophy of cerebellum, but lesions of one side of the brain, without lesion of thalamus, do not cause crossed atrophy. There is a tract divisible into three parts: (1) from cortex to thalamus, (2) from thalamus to red nucleus, (3) from red nucleus via decussation to opposite half of cerebellum. Cases where unilateral lesion of cerebrum is not followed by crossed atrophy of cerebellum would thus be easily explained either by the probability of some of the three portions of the tract escaping, or by the necessary part of the thalamus not being involved.

NEWS AND MISCELLANY.

A malpractice suit recently decided in Milwaukee, Wis., is of interest in several particulars. The trouble grew out of the accidental leaving of a rubber drainage-tube in the pleural cavity. A physician, the defendant in the case, was treating a young man, aged sixteen or seventeen years, for empyema. An operation had been performed—a resection of one rib—and drainage provided for by means of two properly placed tubes; these were secured in position by two silk stitches, each stitch passing through a tube and the skin. The wound discharged freely for several days. Upon one occasion, in dressing the wound, the doctor, having gathered up the soiled gauze and thrown it in the stove, noticed that one of the tubes was missing. The dressing had been removed in such a way as to lead him to think that the tube might possibly have been thrown into the stove along with the soiled dressings. Examination with probes and forceps failed to locate the tube in the empyemic cavity. The gauze was burning or burned, and it was difficult to decide positively where the missing tube was. Another complicating circumstance was the fact that, on the day previous to this, the dressing had been changed by the mother of the patient and in the absence of the doctor. Under these circumstances it was not deemed best to enlarge the wound or make other incisions to look for a tube that might have been thrown into the fire or otherwise lost outside the boy's chest. The wound healed in about the usual time, and convalescence seemed fairly established. Some months later, however, there was a slight purulent discharge through a fistulous opening in the wound, and the boy was told that a second operation would probably be necessary.

The patient then consulted a second physician, by whom he was sent to a hospital and operated upon. Resection of three or four ribs was deemed necessary, and in the discharge thus liberated was found the missing drainage-tube. The patient recovered, and suit was then brought against the first physician for \$20,000, claiming damages for long illness and permanent deformity.

The case was tried three times. In the first trial the jury did not agree; in the second the plaintiff was given a verdict for \$2,000; in the third, the judge threw the case out, on the ground that the plaintiff had not shown in the trial that his illness and disability were due to lack of reasonable skill and care on the part of the first physician.

This final outcome of the case, although not precluding the possibility of further litigation, meets with the very general approval of the local profession.—*Med. News.*

The Bicycle is being put to practical use in Philadelphia. In addition to policemen being mounted on wheels, the messenger boys in the outlying districts have been provided with bicycles and the service rendered is very efficient, as calls can be answered in less than one-half the time it has previously taken.

The use of the bicycle has expanded and developed from a salutary athletic exercise into a great social obsession. It has seized upon every class of society, both sexes, all ages, and every condition of life. It is taken up by the well because it makes them feel better, by the invalids because it makes them feel well, by tired people because it rests them, and by the rested because it makes them feel tired. The fat ride to get thin and the thin to get fat. It has displaced the horse. It has made the simple and ancient custom of walking most unpopular; it has cut down the function of the steam car and competes successfully with the suburban trolley. The doctors have taken it up and expressed their approval of it, and we are far from saying a word in opposition. The bicycle has come to stay, though not with quite the omnipresent activity which it now enjoys. Already we notice grave and reverend seigniors in our profession riding along the cobble stones in their golf suits instead of lying comfortably back in their victorias. Time that used to be spent in serious scientific pursuits at the hospital, in the laboratory, and at the desk is now shortened in order to enjoy a ride up the boulevard. The bicycle has cut down the scientific activity of the New York profession at least fifty per cent. already.—*Post Graduate.*

Physician's Witness Fees.—Judge Toney, in the Law and Equity Court, decided a disputed point which is of interest to all physicians. In a damage suit, Dr. B. F. Atchison was summoned as a witness for the plaintiff. He was not present when the case was called and the plaintiff refused to go into the trial without him, requesting an attachment returnable forthwith. The court refused to issue the attachment, and the plaintiff then had the case dismissed without prejudice. Judge Toney said the plaintiff had not agreed to pay the physician's fees and expenses, and therefore could not force him to appear in court, although he had been subpoenaed. He said the law on this subject is an old one, although it had never been enforced. To compel the attendance of a physician it is first necessary for the party desiring his evidence to pay his fees and costs, and Judge Toney said that he would compel no physician to attend his court under any other circumstances.—*Journal.*

Probably the most interesting sections of the annual report just issued by the Mass. Board of

Registration in Pharmacy are those dealing with the sales of alcoholic liquors by druggists. After outlining the state of things in 1875, when a fourth-class license law for druggists, costing \$50, was passed, the Board goes on to 1878, when the sixth-class special druggist license, costing \$1, was provided. This required the registration of name of purchaser of liquors, residence, date, amount of purchase, price, use and the signature of purchaser. "Drug stores," says the report, "were increasing in number far beyond the needs or demands of the people. Ignorant, inexperienced men, mere pretenders, without the slightest knowledge of pharmacy or regard for honesty, opened stores so hazardous to the welfare of the people that the Legislature in 1885 established this Board to check, if possible, this increase of fraud, deception and crime, and protect the people from the reckless and ignorant dispensing of drugs, medicines and poisons. The statute of 1885 provided for the issuance of certificates to those already in business on their own account or who had had three years' actual experience. This was supplemented in 1887 by a further rule that certificates should be issued only to those passing a satisfactory examination in pharmacy." The Board goes on to say: "This legislation was the beginning of good work, but as the cause of temperance or control of liquor sales advanced, the efforts to hide illegal sales of liquor behind the sign of the mortar and pestle continued to increase, and in some cases were most pronounced. To meet this condition the stringent laws of 1893, giving this Board power to suspend or revoke certificates of registration in pharmacy, were passed. Under this act the Board has suspended seventeen certificates and revoked eight. It is with much regret that we are forced to record the fact that some authorities have ruled that there was no limit under the sixth-class license to the number of sales, or the quantity, under five gallons at any one time. This elastic interpretation of the privileges of the \$1 license is beyond our comprehension, and is surely strong evidence that the privileges should at once be clearly defined." The number of examinations during the past year has been 494. Of these 103 were passed and the rest rejected. Of the total number examined, during the ten years of the Board's existence—3,538—1,059 have been passed. Among the suggestions made for further legislation are: A change extending the time in which complaint for violation of the pharmacy laws can be made from fifteen to sixty or ninety days; to require registration every two years, to provide against persons using dead men's certificates; a clear exposition of the rights and privileges conveyed by a sixth-class liquor license; to give the Board power to examine the records of liquor sales in drug stores, and on discovery of violation of law to have the power of revoking the certificate; to enact that all suspended and revoked certificates must, on demand, be given into the custody of the board. The report proper concludes with an appeal for a sufficient appropriation to carry out the augmented duties ensuing from the acts of 1893 and 1894, and for the employment of one or more special agents — *West. Drug.*